

JVC

SERVICE MANUAL

MODEL
QL-A2

QUARTZ AUTO-RETURN
TURNTABLE




No. 2444
JAN. 1978

Contents

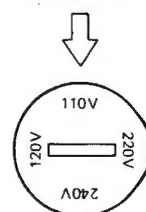
| | Page |
|--|------|
| 1. Specifications | 2 |
| 2. Service Precautions | 3 |
| 3. Features | 3 |
| 4. "How to Operate" (Names and Functions) | 3 |
| 5. Operation of Automatic Mechanism | 4 |
| 6. Block Diagrams | |
| 6-(1) Servomotor Control System | 5 |
| 6-(2) IC802 Integrated Circuits and Waveforms | 5 |
| 7. Troubleshooting | |
| 7-(1) Platter does not rotate | 6 |
| 7-(2) Platter rotates at high speed | 7 |
| 7-(3) Rotation is not locked to the crystal oscillator frequency | 7 |
| 8. Cartridge Replacement | 8 |
| 9. Adjustment Procedures | |
| Servomotor Control Section | |
| 9-(1) Power Supply Voltage Check | 8 |
| 9-(2) Lock Adjustment | 8 |
| Tonearm Section | |
| 9-(3) Overhang Adjustment | 9 |
| 9-(4) Tonearm Lifter Height Adjustment | 9 |
| 9-(5) Auto-return (Lead-out) Adjustment | 9 |
| 9-(6) Tracking Force Adjustment | 10 |
| 9-(7) Anti-skating Adjustment | 10 |
| 10. Lubrication | 11 |
| 11. Exploded Views and Parts List | |
| 11-(1) Cabinet and Mechanism Assembly | 11 |
| 11-(2) Mechanism Base Assembly | 13 |
| 11-(3) Knob Base Assembly | 13 |
| 11-(4) Tonearm Assembly | 14 |
| 11-(5) Parts List with Specified Numbers for Designated Areas | 14 |
| 12. Connection Diagram of TXX-124 | 15 |
| 13. TXX-124 Schematic Diagram | 16 |
| 14. TXX-124 Printed Circuit Board Ass'y and Parts List | 17 |
| 15. Packing Materials and Part Numbers | 21 |
| 16. Accessories List | 21 |
| 17. QL-A2 Schematic Diagram | 22 |

WARNING!

When replacing the parts marked with , be sure to use the designated parts to ensure safety.

CHECKING YOUR LINE VOLTAGE (For U.S. Military Market and Other Countries)

Before inserting the power plug, please check this setting to see that it corresponds with the line voltage in your area. If it doesn't, be sure to adjust the voltage selector switch to the proper setting before operating this equipment. The voltage selector switch is located either on the set's on the chassis. Simply insert a screw driver into the voltage selector switch and turn it in either direction while pressing slightly and in such a way that desired voltage marked on the switch is positioned underneath the arrow marked on the rear panel or the chassis. The voltage selector switch accommodates up to three turns in either direction.



1. Specifications

Motor section

| | |
|-----------------------------|--|
| Motor | : Coreless, DC type FG servomotor |
| Drive system | : Direct drive |
| Speeds | : 33-1/3 and 45 rpm |
| Wow and flutter | : Less than 0.025 % (WRMS) |
| Rumble | : More than 62 dB (IEC-B) More than 72 dB (DIN-B) |
| Speed detection | : Integrated frequency generator |
| Starting torque | : More than 650 g·cm |
| Speed deviation | : Within 0.004 % |
| Load characteristics | : 0 % (with 100 g total tracking force) |
| Drift per hour | : 0.0001 %/H |
| Power characteristics | : 0 % (± 10 % V) |
| Temperature characteristics | : 0.00005 %/°C |
| Platter | : 31.2 cm diameter |

Tonearm section

| | |
|------------------------------------|---|
| Type | : T.H. (Tracing-Hold system, static balance) |
| Effective length | : 220 mm |
| Tracking error | : $+3^{\circ}35' - 0^{\circ}43'$ |
| Overhang | : 15 mm |
| Tracking force range | : 0 — 3 g (0.25 grams division, direct reading) |
| Weight range (including headshell) | : 14.5 — 21 g (Headshell 10 g) |

Cartridge section (not provided on units for U.S.A., Canada and the U.K.)

| | |
|------------------------|---|
| Type | : Moving Magnet (Cartridge body: MD-1025) |
| Stylus | : 0.5 mil. diamond (DT-Z1S) |
| Optimum tracking force | : 2 grams |
| Output | : 3 mV (1 kHz) |
| Frequency response | : 10 to 25 000 Hz |
| Separation | : More than 25 dB (1 kHz) (with test record TRS-1) |
| Load resistance | : 47 kilohms — 100 kilohms |
| Compliance | : 10×10^{-6} cm/dyne (Dynamic) 30×10^{-6} cm/dyne (Static) |

General

| | |
|------------|--|
| Dimensions | : 14.7 (H) x 46.0 (W) x 36.5 (D) cm (with cover closed) (5-13/16" x 18-1/8" x 14-3/8") (Since the dimensions show only the design measurements, consideration is required when installing the unit in a limited space such as a rack.) |
| Weight | : 6.5 kg (14.3 lbs) (without corrugated cardboard case) |

Power Specifications

| Countries | Line Voltage & Frequency | Power Consumption |
|----------------------|---|-------------------|
| U.S.A. & CANADA | AC 120 V, 60 Hz | 9 watts |
| CONTINENTAL EUROPE | AC 220 V~, 50 Hz | 9 watts |
| U.K. & AUSTRALIA | AC 240 V~, 50 Hz | 9 watts |
| U.S. MILITARY MARKET | AC 110, 120, 220, 240 V Selectable, 50/60 Hz | 9 watts |
| OTHER AREAS | AC 110, 120, 220, 240 V Selectable, 50/60 Hz | 9 watts |

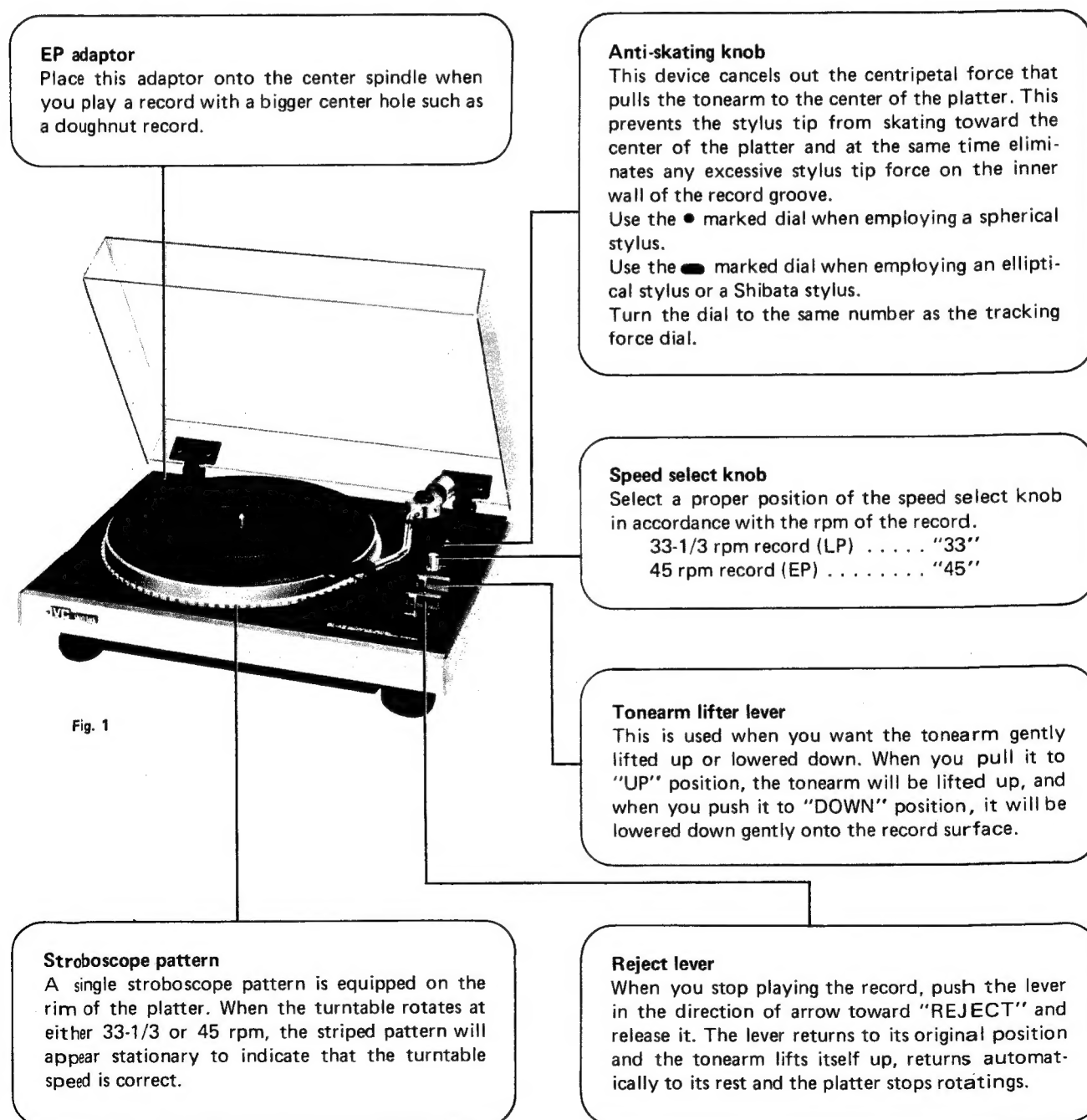
2. Service Precautions

1. Be sure to place the unit on a level surface when adjusting motor rotation.
2. In servicing, do not use parts other than those specified.
3. Be careful not to damage the motor shaft when repairing the motor unit.
4. When the heat sink (including X815) is removed from the motor board to permit repair of the circuit board, the transistor temperature may increase due to the lack of heat radiation.

3. Features

- Quartz-locked speed control system
- DC type FG servomotor
- Quartz-locked one-row stroboscope
- Oil-damped cueing
- Anti-skating mechanism

4. "How to Operate" (Names and Functions)



5. Operation of Automatic Mechanism

Change cycle mechanism:

1. During playing, the notch of the main gear position relative to the turntable spindle gear is as shown in Fig. 2.
2. As the projection is away from the engagement, the main gear does not rotate even though the turntable.
3. As playing proceeds, the trip slide moves toward the center of the turntable following the movement of the tonearm as shown in Fig. 3.
4. The engagement is very easy to move as it simply rests on the lower trip. On the music section of the record groove the engagement moves so slightly that it is returned by the tip of the projection. Consequently, the turntable spindle gear does not engage with the main gear and thus does not trigger the auto-return operation.
5. When playing ends and the pick-up cartridge enters the lead-out groove which is spaced out, the engagement advances more than it is returned by the projection. Because of this, the engagement is pressed by the projection as shown in Fig. 4, causing the main gear to turn and engage with the turntable spindle gear. Thus the change cycle is started.
6. During the return operation the engagement and lower trip which have moved are returned to their original position by the reject lever coming into contact with the bottom of the lower trip. At this moment the switch lever operates with the help of the main gear cam, switching off the power just before the rotation should stop. This completes the automatic cycle.

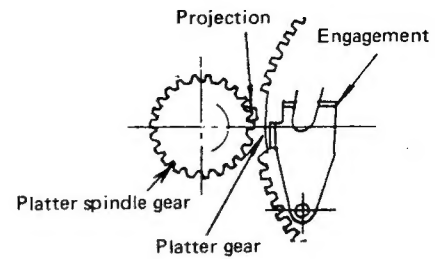


Fig. 2

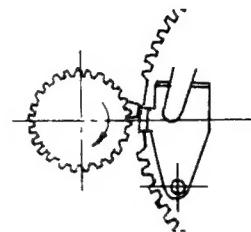


Fig. 3

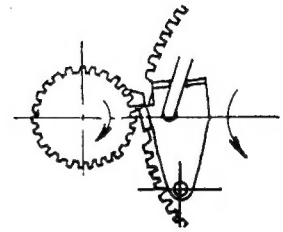


Fig. 4

Tonearm lift and return mechanism:

1. When the main gear starts to rotate at the end of playing, the return lever rotates under the action of the main gear cam to press the elevator cam. The upward movement of the elevator cam is directly converted into movement of the elevator, lifting up the tonearm. (Fig. 5)
2. The tonearm is returned by the arm lever the end of which presses it as the main gear rotates. (Fig. 6)

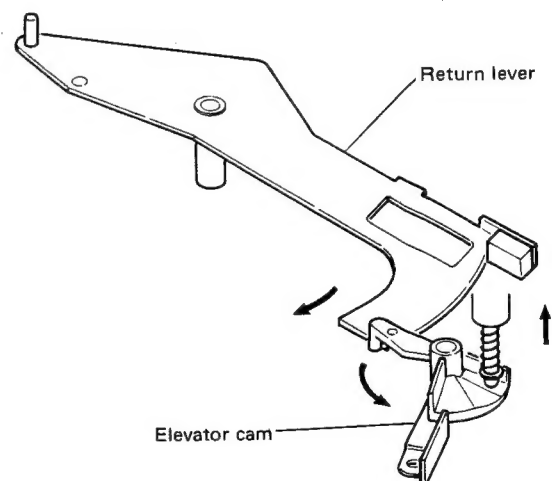


Fig. 5

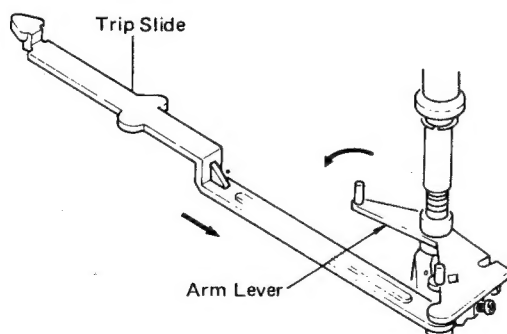


Fig. 6

6. Block Diagrams

6-(1) Servomotor Control System

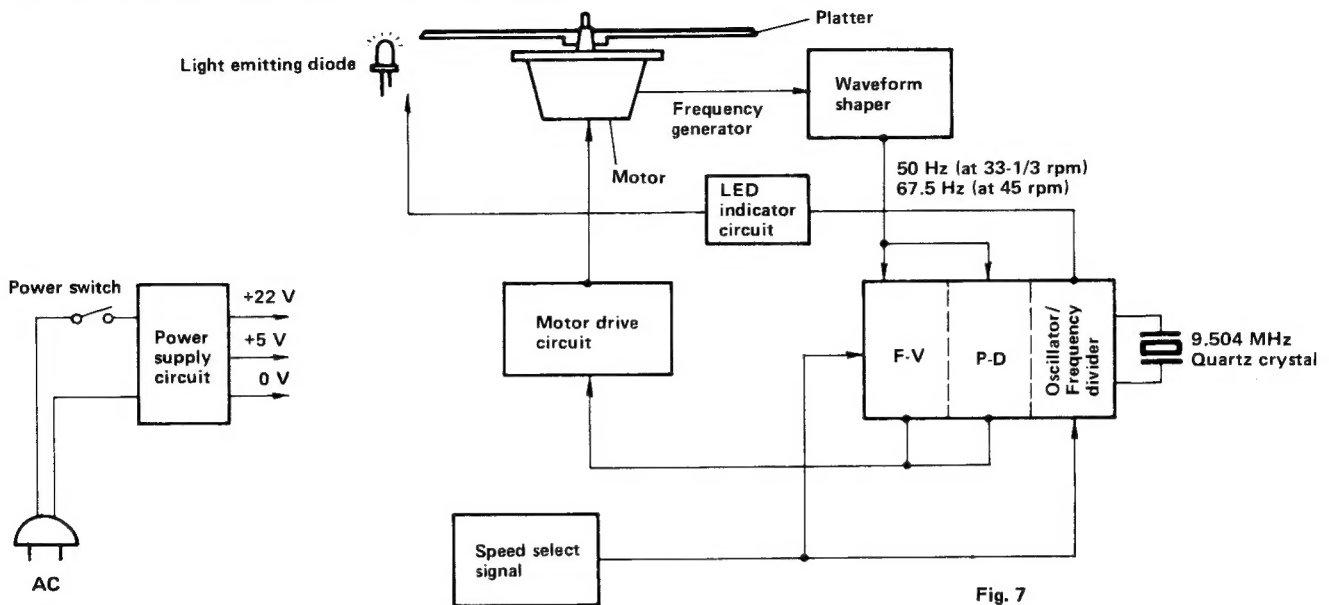


Fig. 7

6-(2) IC802 Integrated Circuits and Waveforms

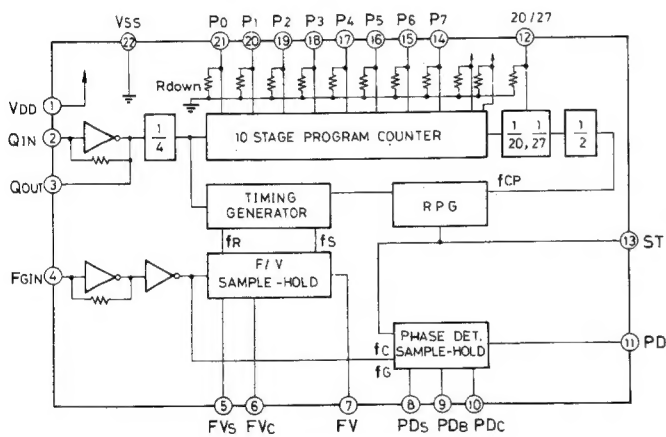


Fig. 8 Block Diagram

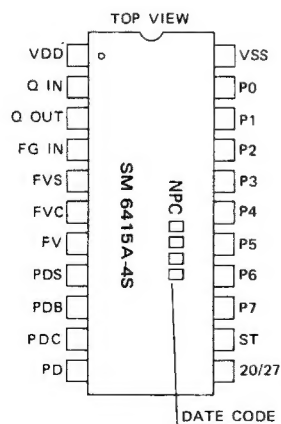


Fig. 9 Pins Location

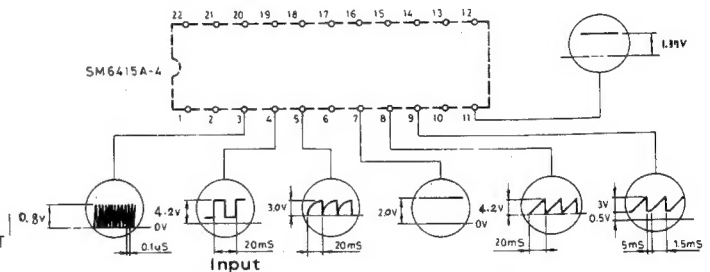


Fig. 10 Waveforms (Pin 1 through Pin 11)

F/V section

Waveform at pin 4.



Waveform at pin 5.



Waveform at pin 7.

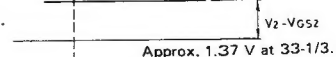


P/D section

Waveform at pin 8.



Waveform at pin 11.



Be sure to obtain the waveform at pin 13 through R820, otherwise the IC may be damaged.

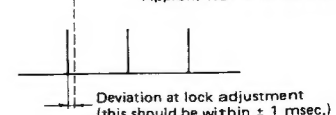
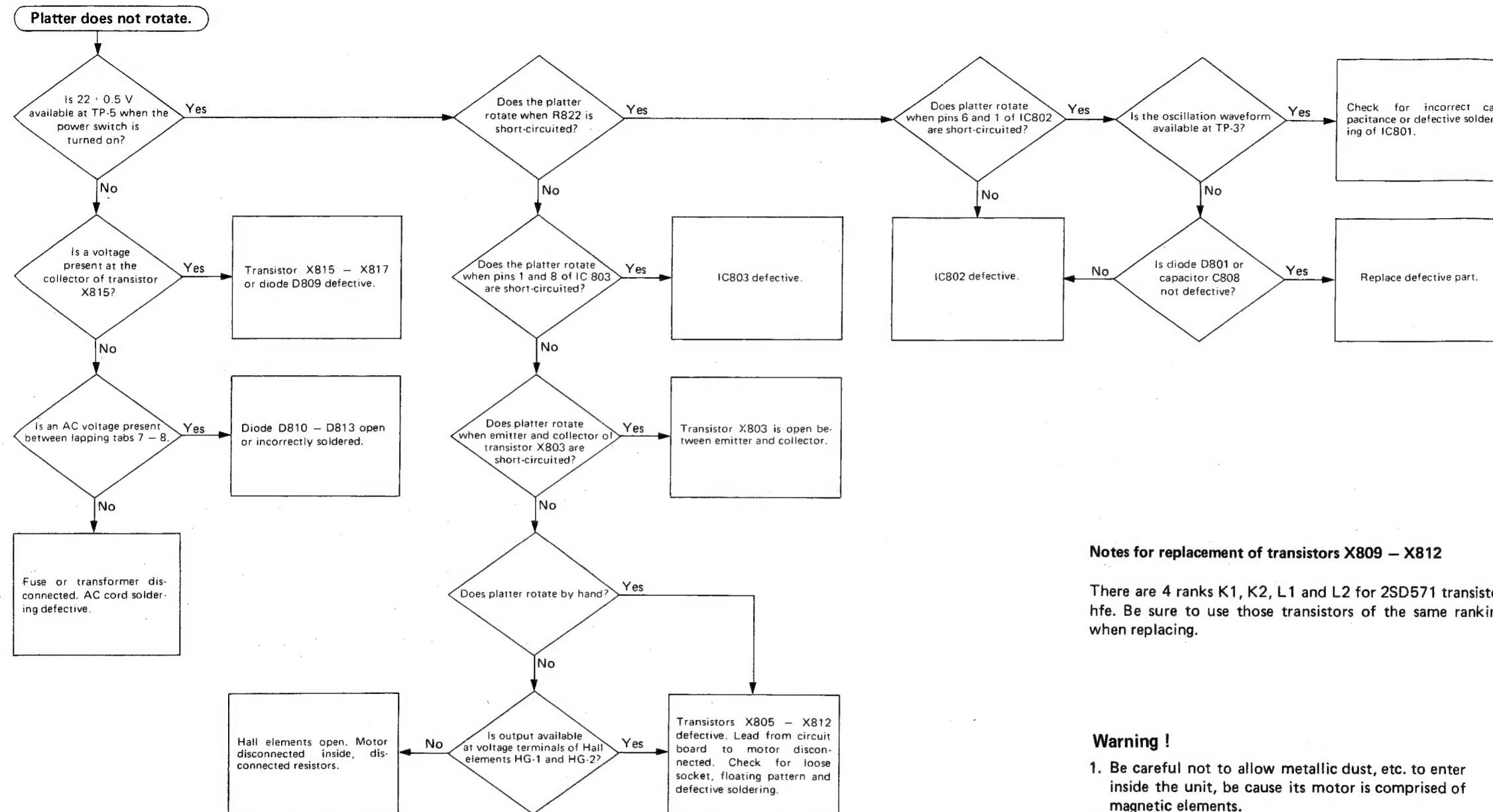


Fig. 11 Waveforms (F/V and P/D)

7. Troubleshooting

7-(1) Platter does not rotate



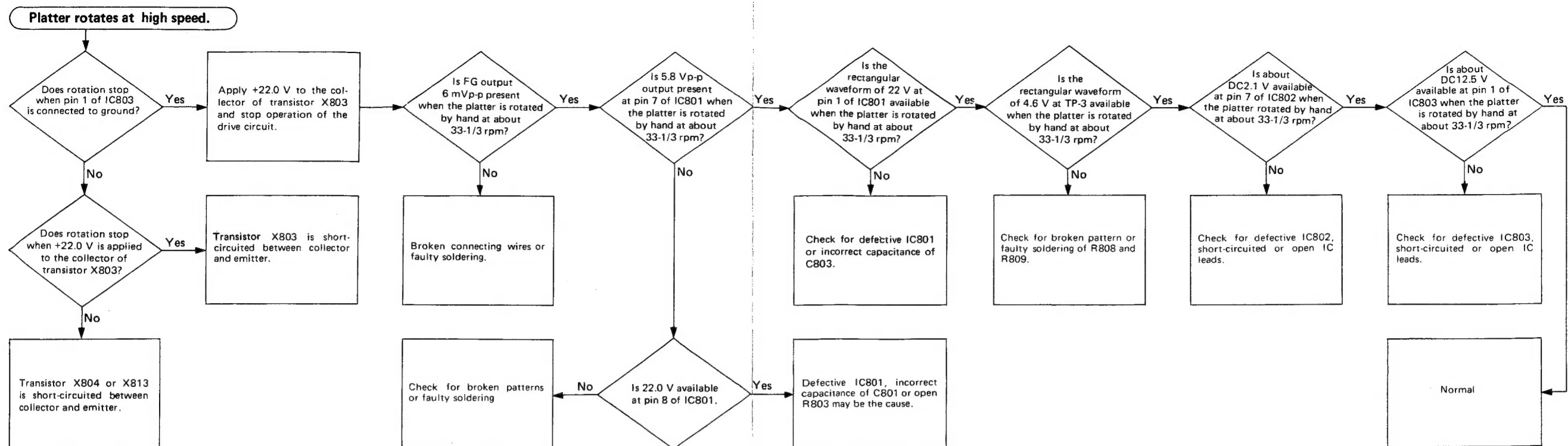
Notes for replacement of transistors X809 — X812

There are 4 ranks K1, K2, L1 and L2 for 2SD571 transistor hfe. Be sure to use those transistors of the same ranking when replacing.

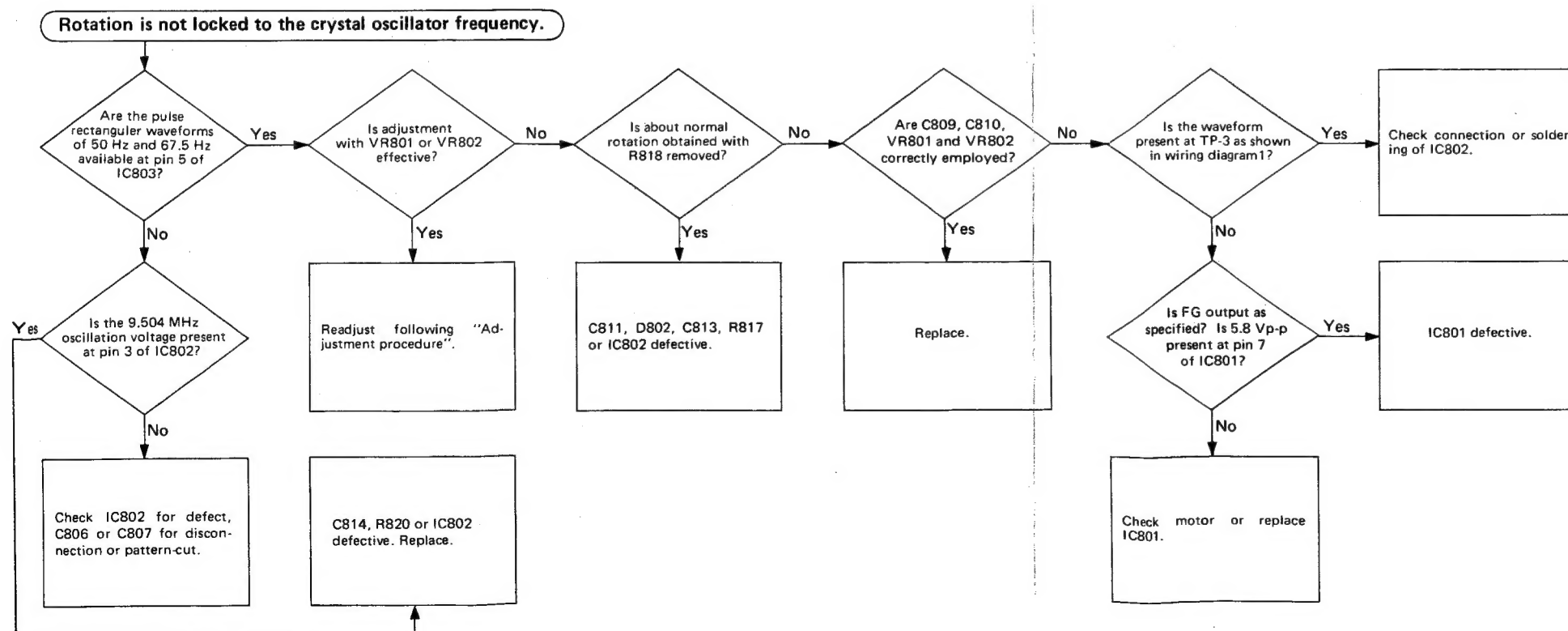
Warning !

1. Be careful not to allow metallic dust, etc. to enter inside the unit, because its motor is comprised of magnetic elements.
2. After replacement of the X813 transistor, apply KE45RTV (silicone adhesive) or an equivalent material around the transistor for thermal conduction.

7-(2) Platter rotates at high speed



7-(3) Rotation is not locked to the crystal oscillator frequency



Warning !

1. Be careful not to allow metallic dust, etc. to enter inside the unit, because its motor is comprised of magnetic elements.
2. After replacement of the X813 transistor, apply KE45RTV (silicone adhesive) or an equivalent material around the transistor for thermal conduction.

8. Cartridge Replacement

1. Unscrew the connector nut to remove the headshell.
2. Remove the two long screws on the headshell which hold the cartridge.
3. Connect the lead wires of the headshell to the new cartridge, being careful to match the polarities correctly. Polarity and wire colors are as follows:
 White (+) L Red (+) R
 Blue (-) LE Green (-) RE
4. Attach the cartridge to the headshell squarely, and gently tighten the screws.
5. Set the cueing lever to "DOWN", and then bring the stylus tip to the overhang indicator by sliding the cartridge back and forth. After the adjustment, fix it firmly.
6. After attaching the cartridge, slide the headshell into the tonearm with the connector pin fitting in the groove. Tighten the connector nut.

7. Be sure to adjust the tracking force and lead-in position after replacing the cartridge.

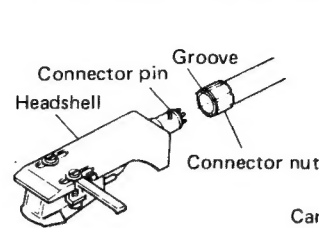


Fig. 12

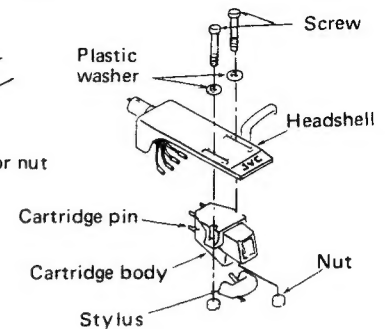


Fig. 13

9. Adjustment Procedures

Servomotor Control Section

9-(1) Power Supply Voltage Check

1. Disconnect the motor socket from the circuit board. Turn the power switch on. (Confirm that the rated voltage is applied to the unit.) Confirm that 22 ± 0.5 V DC is present at TP-5. If the voltage is deviate from that range, adjust with the semi-fixed resistor VR803 (1 k Ω).
2. Confirm that the voltage difference at TP-5 is less than -1V when the platter is stalled with hand.

9-(2) Lock Adjustment

1) With dual beam oscilloscope

1. Connect the motor socket to the circuit board. Connect the dual beam oscilloscope to TP-3, TP-4. Obtain a turntable speed of 45 rpm by setting the speed select switch to 45 and turn the power switch on, then adjust the semi-fixed resistor VR802 (100 k Ω) until the following waveforms are obtained.

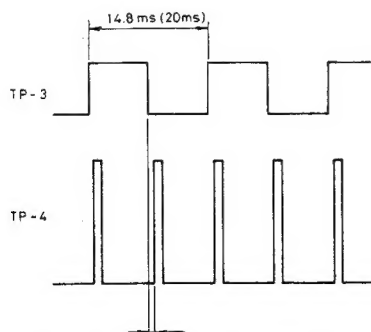


Fig. 14

Adjust to get a difference of within ± 1 msec from TP-4.

2. Obtain a turntable speed of 33-1/3 rpm by setting the speed select switch to 33-1/3, then adjust the semi-fixed resistor VR801 (47 k Ω) until the difference between TP-3 and TP-4 is within ± 1 msec.

2) With single beam oscilloscope

Connect the single beam oscilloscope to TP-3, TP-4 as shown in Fig. 15 below. Adjust until the waveforms shown in Fig. 16 are obtained.

The allowable deviation for adjustment should be within 1 msec. as shown in Fig. 16, Fig. 17.

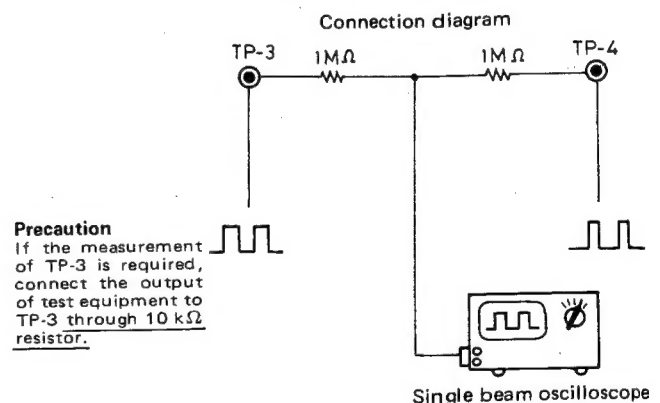


Fig. 15

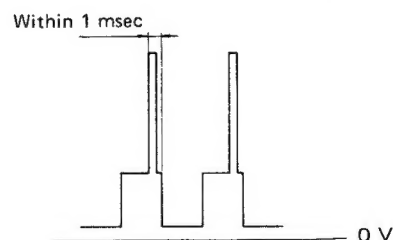


Fig. 16

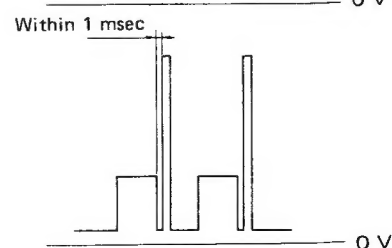


Fig. 17

Tonearm Section

Adjustment

The following adjustments should be performed only when replacing a cartridge or a headshell.

Otherwise, no adjustment is required.

Note: If necessary to replace a cartridge, usage of that headshell exclusive to this unit is recommended.

9-(3) Overhang Adjustment

Loosen the stylus mounting screws and slide the cartridge to adjust the stylus tip position so that tip is coming just over the overhang indicator. (See Fig. 18.)

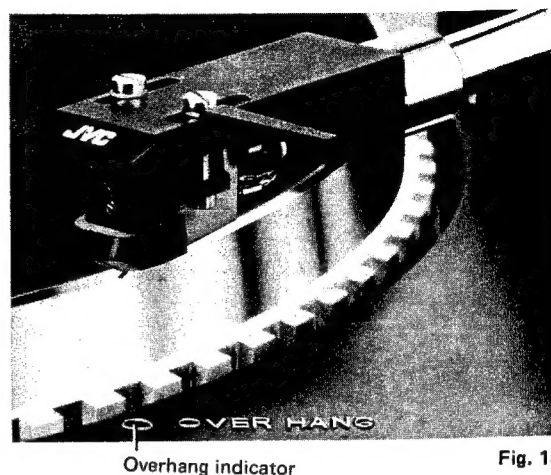


Fig. 18

9-(4) Tonearm Lifter Height Adjustment

Adjust the height of tonearm lifter with the adjustment screw so that the distance between the stylus tip and the surface of record is about 6 mm when the stylus is elevated. Turn the height adjustment screw clockwise to lower, and counterclockwise to raise the tonearm lifter level. (See Fig. 19.)



Fig. 19

9-(5) Auto-return (Lead-out) Adjustment

When the pulley has been replaced for a different record or if auto-return functions early, adjust as shown in Fig. 20.

- When change cycle starts too late, turn the screw counterclockwise with a screwdriver.
- When change cycle starts too early, turn the screw clockwise.

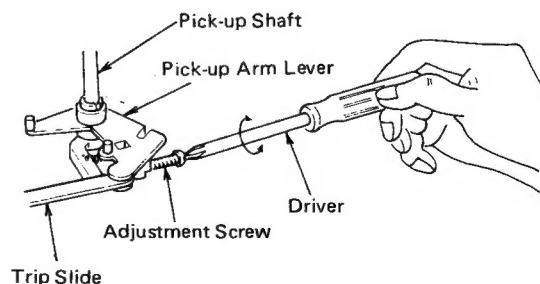


Fig. 20

9-(6) Tracking Force Adjustment

1. Set the anti-skating knob to the "0" mark on the dial.
2. Place an unwarped disc onto the platter.
3. Remove the stylus cover from the stylus.
4. Release the tonearm clamp.
5. Turn the counterweight until the tonearm is balanced.
6. Stop turning the counterweight when the stylus tip is almost touching the disc surface.
7. Return the tonearm to the rest and clamp it.
8. Hold the counterweight at the adjusted position and turn the tracking force dial until the "0" mark is aligned with the index line on the tonearm weight shaft. Turn the counterweight in the **B** direction until the "2" mark on the dial is aligned with the index line for the model preparing cartridge Z-1S.

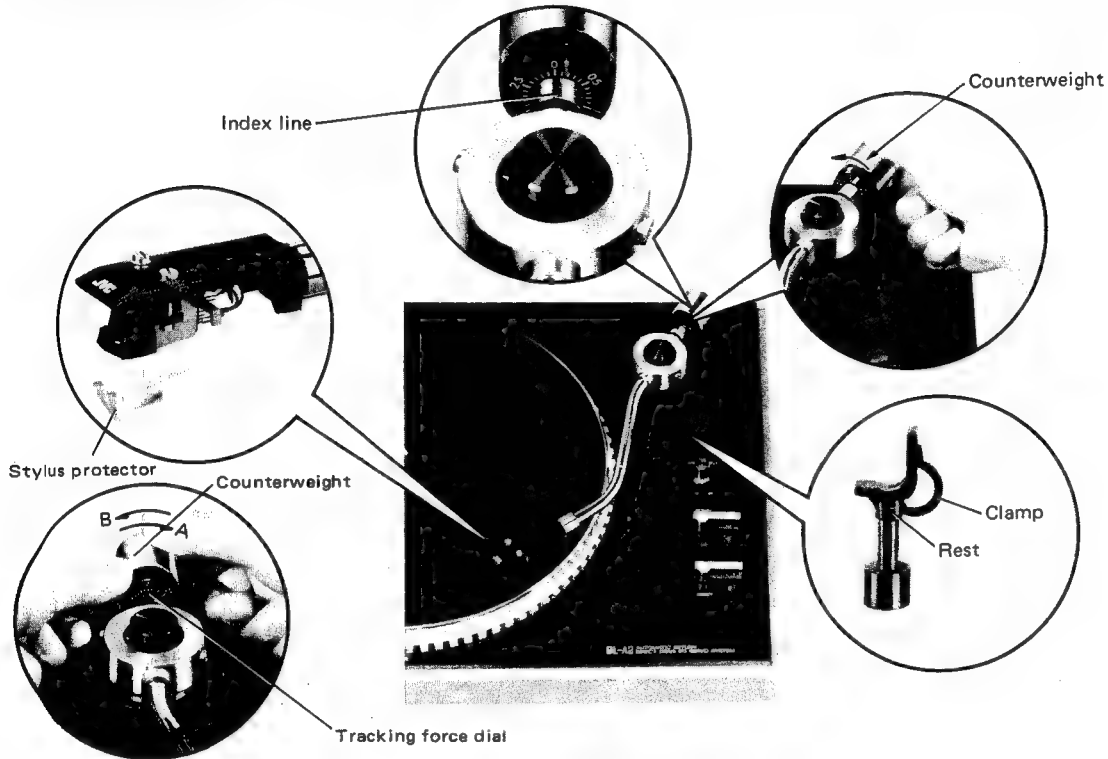


Fig. 21

9-(7) Anti-skating Adjustment

Adjust the anti-skating force according to the cartridge used. Turn the anti-skating knob dial to the same number on the tracking force dial.

Use the ● marked dial when employing a spherical stylus. Use the ■ marked dial for an elliptical or a Shibata stylus. Set the "2" of the ● marked dial to the index line since the QL-A2 is provided with a spherical stylus and the tracking force has been adjusted to 2 g.

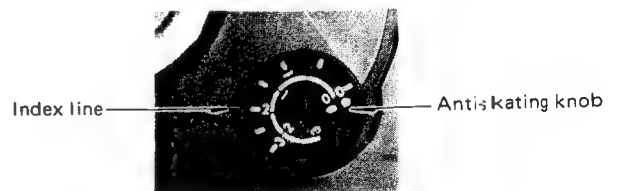


Fig. 22

10. Lubrication

The direct drive motor employed in this unit does not require the lubrication.

11. Exploded Views and Parts List

11-(1) Cabinet and Mechanism Assembly

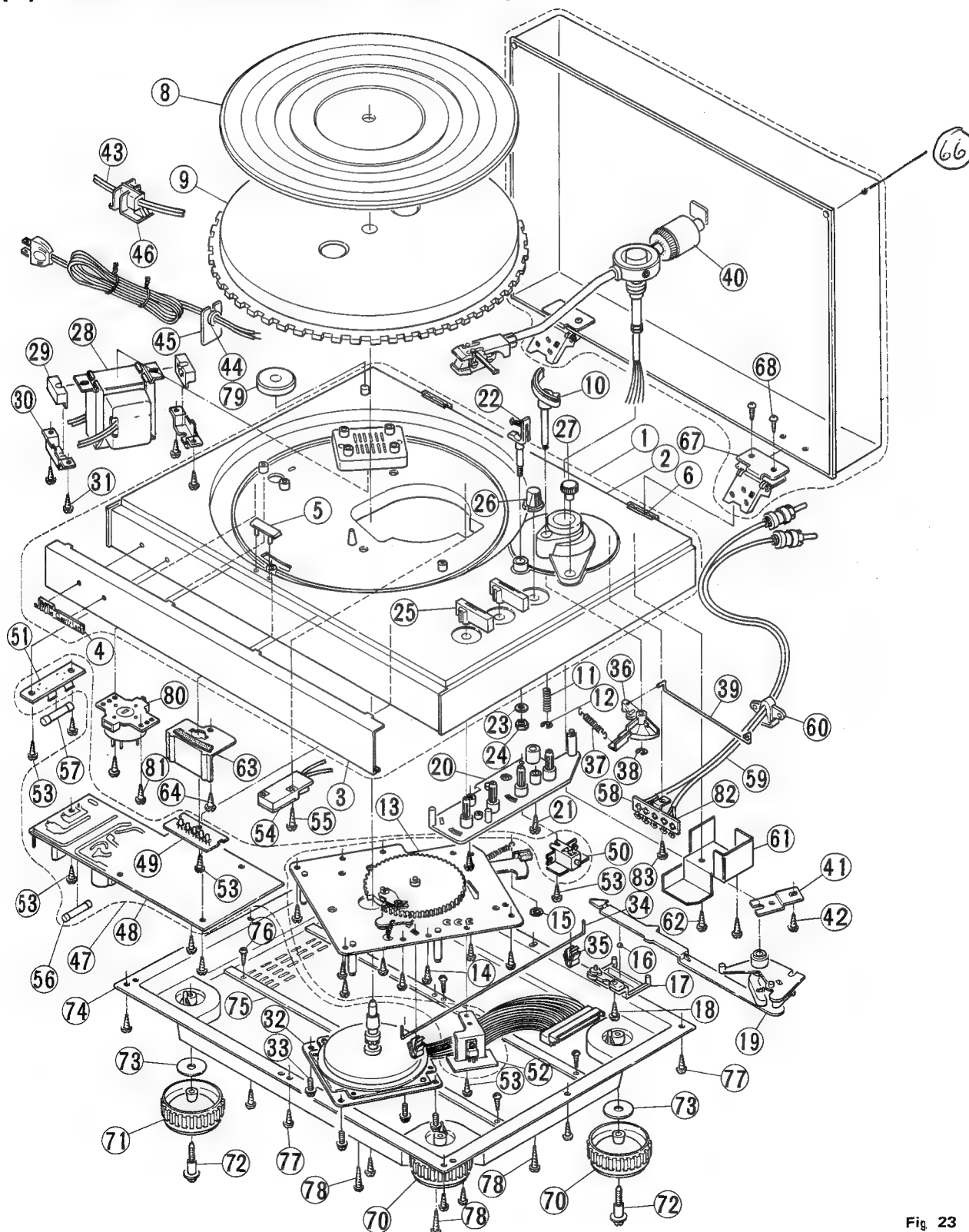


Fig. 23

Parts List

| Item No. | Part Number | Description | Q'ty |
|----------|--------------|-------------------------------------|------|
| 1 | E22658-002 | Cabinet Ass'y | 1 |
| 2 | E10231-001 | Cabinet | 1 |
| 3 | E35463-001 | Front Panel | 1 |
| 4 | E65480-001 | Mark (JVC Mark) | 1 |
| 5 | E65393-001 | Mark | 1 |
| 6 | E65526-001 | Cushion | 2 |
| 7 | | | |
| 8 | See page 14. | Platter Cover | 1 |
| 9 | E22659-001 | Platter | 1 |
| 10 | E61472-002 | Lifter Ass'y | 1 |
| 11 | E61194-001 | Spring | 1 |
| 12 | REE3000X | E Ring | 1 |
| 13 | A2001 | Base Ass'y (Refer to page 13.) | 1 |
| 14 | SBSB3010Z | Tapping Screw | 8 |
| 15 | G4942-4 | Speed Nut | 1 |
| 16 | G41505-1 | Steel Ball | 1 |
| 17 | E49873-002 | Ball Holder | 1 |
| 18 | SBSB3008Z | Tapping Screw | 1 |
| 19 | E33896-003 | Arm Lever Ass'y | 1 |
| 20 | E35458-001 | Knob Base Ass'y (Refer to page 13.) | 1 |
| 21 | SBSB3008Z | Tapping Screw | 2 |
| 22 | E60982-002 | Arm Rest Ass'y | 1 |
| 23 | WLS4000N | Washer | 1 |
| 24 | NTB4000BS | Nut | 1 |
| 25 | E35471-001 | Knob | 2 |
| 26 | E35507-001 | " | 1 |
| 27 | E65303-001 | " (ANTI) | 1 |
| 28 | See page 14. | Power Transformer Δ | 1 |
| 29 | E61824-001 | Cushion | 2 |
| 30 | E61985-001 | Spacer | 2 |
| 31 | SBSB3012Z | Tapping Screw | 4 |
| 32 | M938A | Motor | 1 |
| 33 | DPSP4008Z | Ass'y Screw | 4 |
| 34 | E60985-001 | Rod | 1 |
| 35 | E49679-001 | Rod Holder | 2 |
| 36 | E49595-003 | Elevator Cam | 1 |
| 37 | E49596-001 | Spring | 1 |
| 38 | REE3000X | E Ring | 1 |
| 39 | E60986-002 | Rod | 1 |
| 40 | See page 14. | Tonearm Ass'y | 1 |
| 41 | E65289-001 | Stopper | 1 |
| 42 | SBSB3008Z | Tapping Screw | 1 |

| Item No. | Part Number | Description | Q'ty |
|----------|--------------|--------------------------------|------|
| 43 | See page 14. | Power Cord Δ | 1 |
| 44 | " | Cord Stopper | 1 |
| 45 | " | Cord Stopper Plate | 1 |
| 46 | " | Cord Clamp | 1 |
| 47 | " | P.C. Board Ass'y Δ | 1 |
| 48 | — | P.C. Board Ass'y * | 1 |
| 49 | — | L.E.D. P.C. Board Ass'y * | 1 |
| 50 | — * | Push Switch P.C. Board Ass'y * | 1 |
| 51 | — | Fuse P.C. Board Ass'y * | 1 |
| 52 | — | Transistor P.C. Board Ass'y * | 1 |
| 53 | SBSB3008Z | Tapping Screw | 8 |
| 54 | See page 14. | Micro Switch Δ | 1 |
| 55 | SBSB3016M | Tapping Screw | 1 |
| 56 | See page 14. | Fuse Δ | 1 |
| 57 | " | " Δ | 1 |
| 58 | QML1310-051 | Lug Strip Ass'y | 1 |
| 59 | E03697-003 | Signal Cord Ass'y | 1 |
| 60 | E33944-001 | Cord Stopper | 1 |
| 61 | E65499-001 | Shield Cover | 1 |
| 62 | SBSB3008Z | Tapping Screw | 2 |
| 63 | E65291-001 | Color Screen | 1 |
| 64 | SBSB3008Z | Tapping Screw | 1 |
| 65 | E35460-001 | Dust Cover Ass'y | 1 |
| 66 | E10215-001 | Dust Cover | 1 |
| 67 | E61992-002 | Hinge Ass'y | 2 |
| 68 | SDSP3008MS | Screw | 4 |
| 69 | | | |
| 70 | See page 14. | Foot Ass'y | 2 |
| 71 | " | " | 2 |
| 72 | E65273-001 | Foot Holder | 4 |
| 73 | Q03091-112 | Washer | 4 |
| 74 | See page 15. | Bottom Plate Ass'y | 1 |
| 75 | E35457-001 | Frame | 2 |
| 76 | SBSB3008Z | Tapping Screw | 6 |
| 77 | SBSB3012M | " | 8 |
| 78 | SBSB3016M | " | 3 |
| 79 | E48820-001 | EP-Adaptor | |
| 80 | See page 14. | Voltage Selector Δ | |
| 81 | SBSB3008Z | Tapping Screw | |
| 82 | QML0002-051 | Lug Strip Ass'y | |
| 83 | SBSB3008Z | Tapping Screw | |

*These parts are not supplied separately.

NOTE: Δ SAFETY PARTS

11-(2) Mechanism Base Assembly

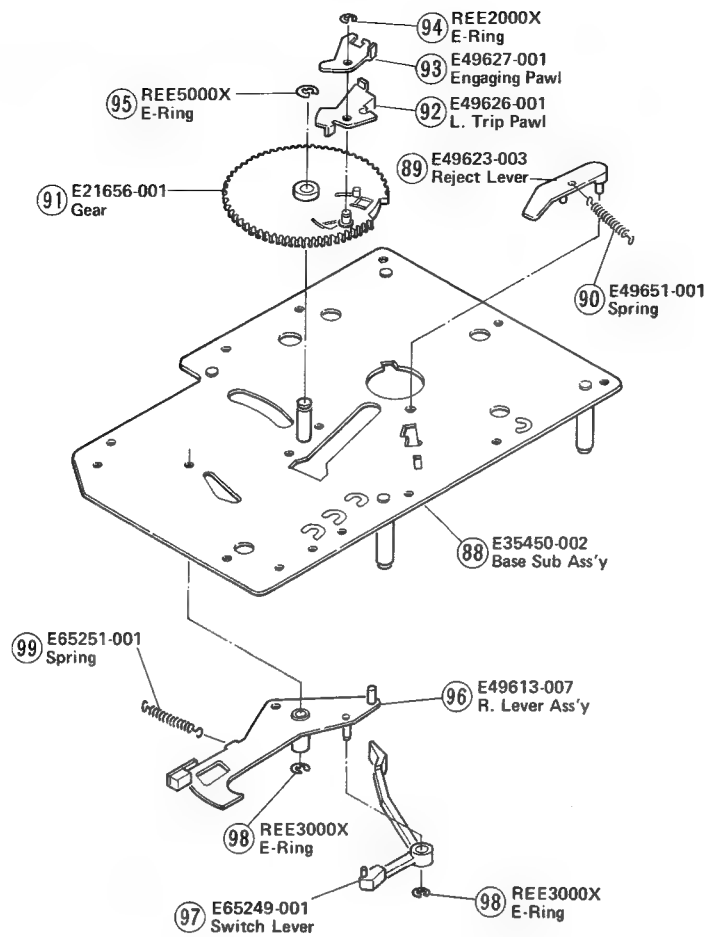


Fig. 24

11-(3) Knob Base Assembly

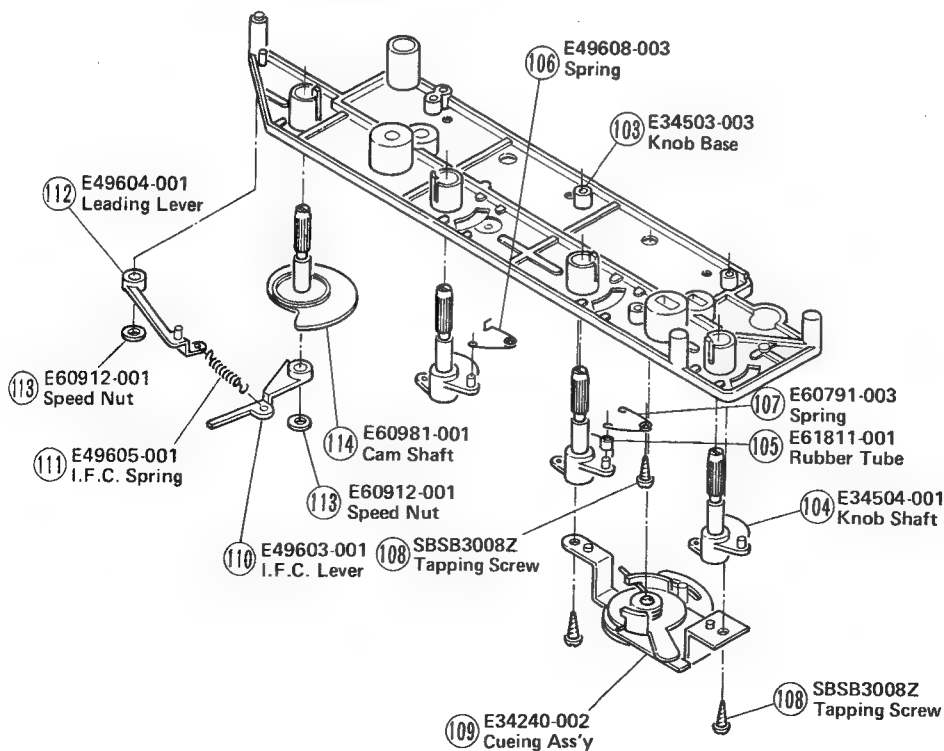


Fig. 25

11-(4) Tonearm Assembly

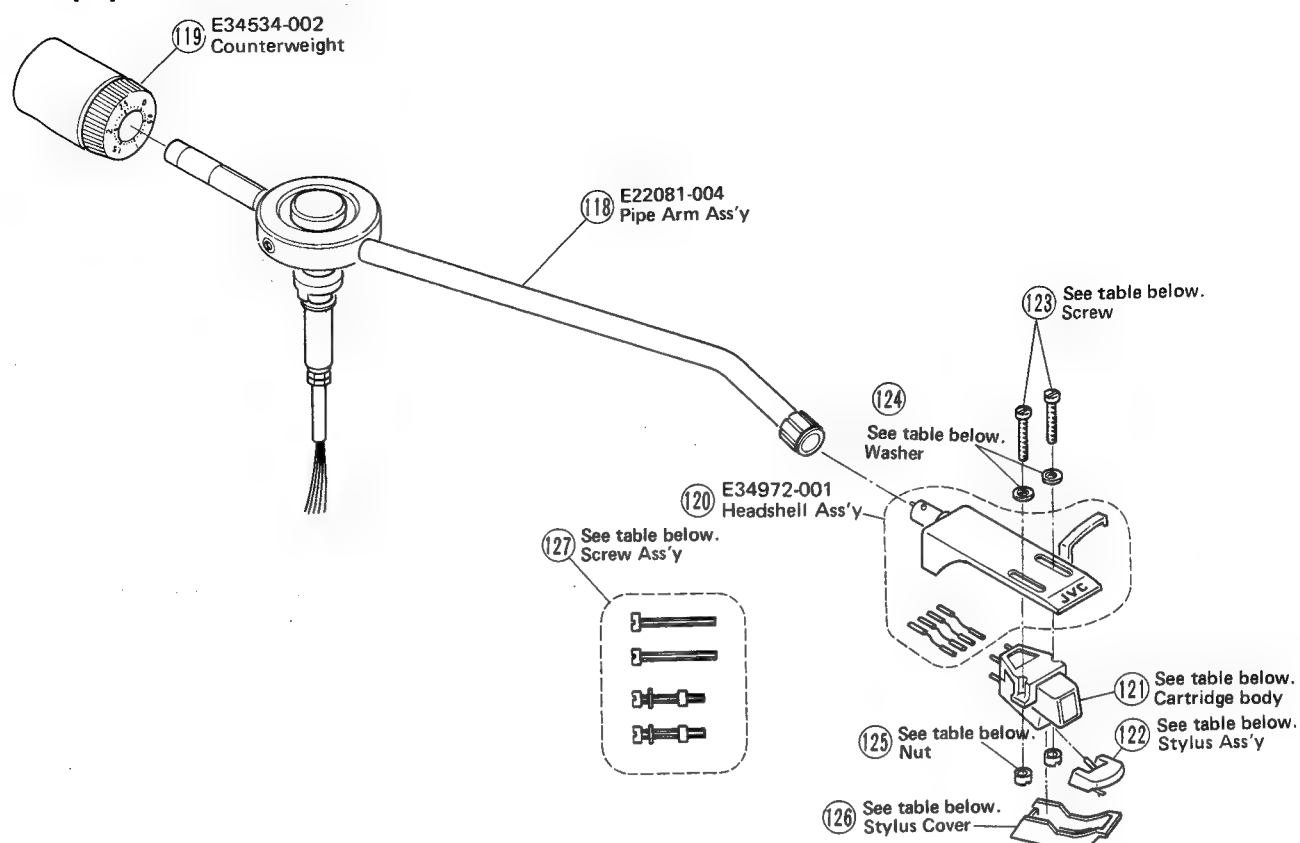


Fig. 26

11-(5) Parts List with Specified Numbers for Designated Areas

| Item No. | Description | U.S.A. & Canada | U.S. Military Market and Other Countries | U.K. | Australia | Europe |
|----------|---------------------|-----------------------|--|---------------------------|---------------------------|---------------------------|
| 8 | Platter Cover | E22719-002 | E22719-001 | E22719-001 | E22719-001 | E22719-001 |
| 28 | Power Transformer ⚠ | E03032-31B | E03032-31D | E03032-31C | E03032-31C | E03032-31C |
| 40 | Tonearm Ass'y | ARM-523 | MP-185S | ARM-523 | MP-185S | MP-185S |
| 43 | Power Cord ⚠ | QMP1200-244 | QMP1200-244 | QMP9017-008 | QMP2500-200 | QMP3910-244 |
| 44 | Cord Stopper | QHS3876-162 | — | — | — | — |
| 45 | Cord Stopper Plate | E65465-001 | — | — | — | — |
| 46 | Cord Clamp | — | A37897 | A37897 | A37897 | A37897 |
| 47 | P.C. Board Ass'y ⚠ | TXX-124B TXX-124C | TXX-124D | TXX-124F | TXX-124E | TX X-124E |
| | Contact Clip | E45524-001 | E45524-001 | E48965-002 | E48965-002 | E48965-002 |
| | P.C. Board (plain) | E22742-002 | E22742-001 | E22742-001BS | E22742-001 | E22742-001 |
| 54 | Micro Switch ⚠ | QSM1V01-001 | QSM1V01-001 | QSM1V01-022 | QSM1V01-022 | QSM1V01-022 |
| 56 | Fuse ⚠ | QMF61U1-R50 (0.5A) | QMF60S1-R50 (0.5A) | QMF51A2-R50 (0.5AT) | QMF51A2-R50 (0.5AT) | QMF51A2-R50 (0.5AT) |
| 57 | Fuse ⚠ | QMF61U1-R50 (0.5A) | QMF60S1-R50 (0.5A) | QMF51A2-R125 (0.125AT) | QMF51A2-R125 (0.125AT) | QMF51A2-R125 (0.125AT) |
| 70 | Foot Ass'y | E35118-010 (BLK) | E35118-012 (BRN) | E35118-012 (BRN) | E35118-012 (BRN) | E35118-012 (BRN) |
| 71 | Foot Ass'y | E35118-011 (GRY) | E35118-013 (BLU) | E35118-013 (BLU) | E35118-013 (BLU) | E35118-013 (BLU) |
| 74 | Bottom Plate Ass'y | E22342-007 | E22342-008 | E22342-008 | E22342-008 | E22342-008 |
| 80 | Voltage Selector ⚠ | — | QSR0085-001 | — | — | — |
| 121 | Cartridge Body | — | MD-1025 | — | MD-1025 | MD-1025 |
| 122 | Stylus Ass'y | — | DT-Z1S | — | DT-Z1S | DT-Z1S |
| 123 | Screw | — | EG83456 | — | EG83456 | EG83456 |
| 124 | Washer | — | EG82971 | — | EG82971 | EG82971 |
| 125 | Nut | — | E60503-001 | — | E60503-001 | E60503-001 |
| 126 | Stylus Cover | — | E34268-001 | — | E34268-001 | E34268-001 |
| 127 | Screw Ass'y | E61153-003 | — | E61153-003 | — | — |

NOTE: ⚠ SAFETY PARTS

12. Connection Diagram of TXX-124

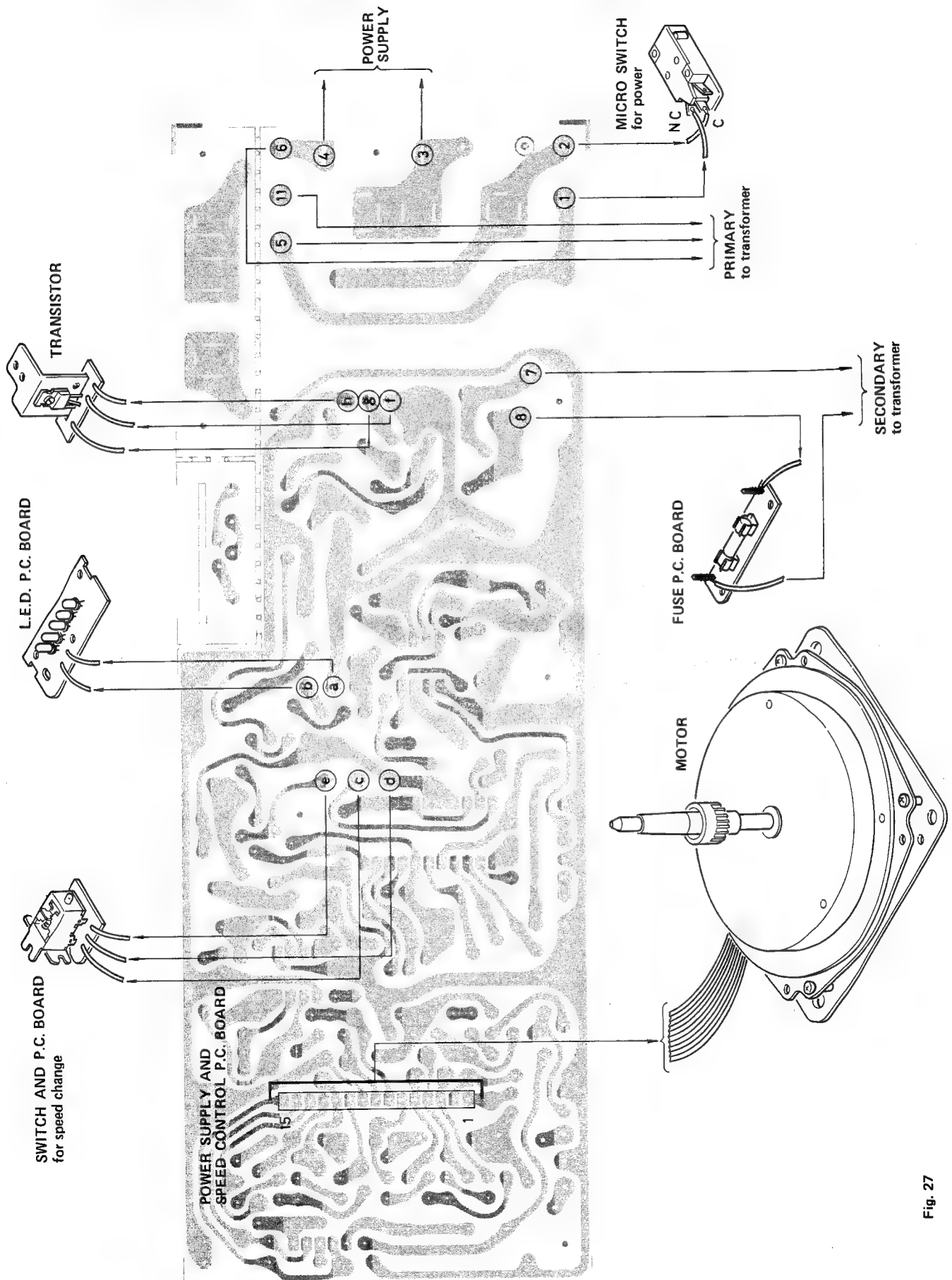
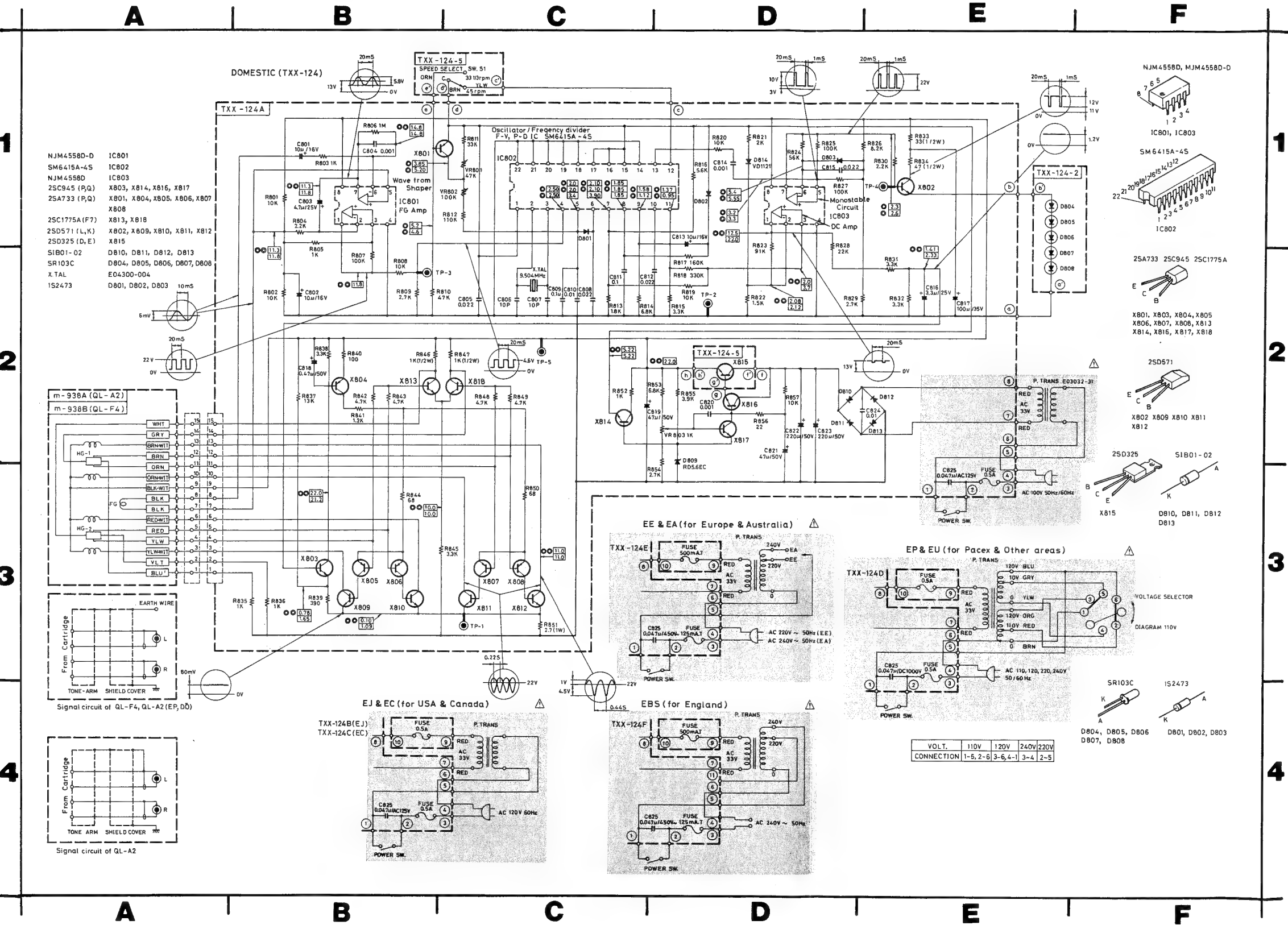
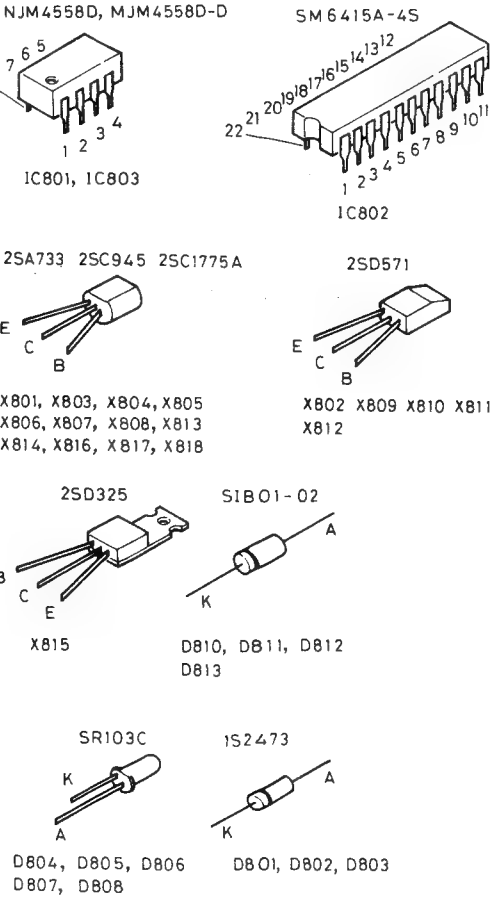


Fig. 27

13. TXX-124 Schematic Diagram



- Notes:
- The voltage indicated in \square is measured by a tester having an internal impedance of 33 k Ω /V.
 - \bullet 33-1/3 rpm
 - \odot 45 rpm
 - \square When locked
 - X809 through X812 should be of the same rank.
(There are four different rankings available on the market as follows:
2SD571 K1, K2, L1 and L2
Be sure to use only one rank of those transistors being replaced.)
 - When replacing either of these transistors 2SC1775A(F7), X813 or X818, they should be replaced together as a pair both being of the same rank.
 - indicates positive B power supply.
 - indicates signal path.
 - When replacing the parts in the darkened area and those marked with Δ , be sure to use the designated parts to ensure safety.
 - This is the standard circuit diagram.
The design and contents are subject to change without notice.

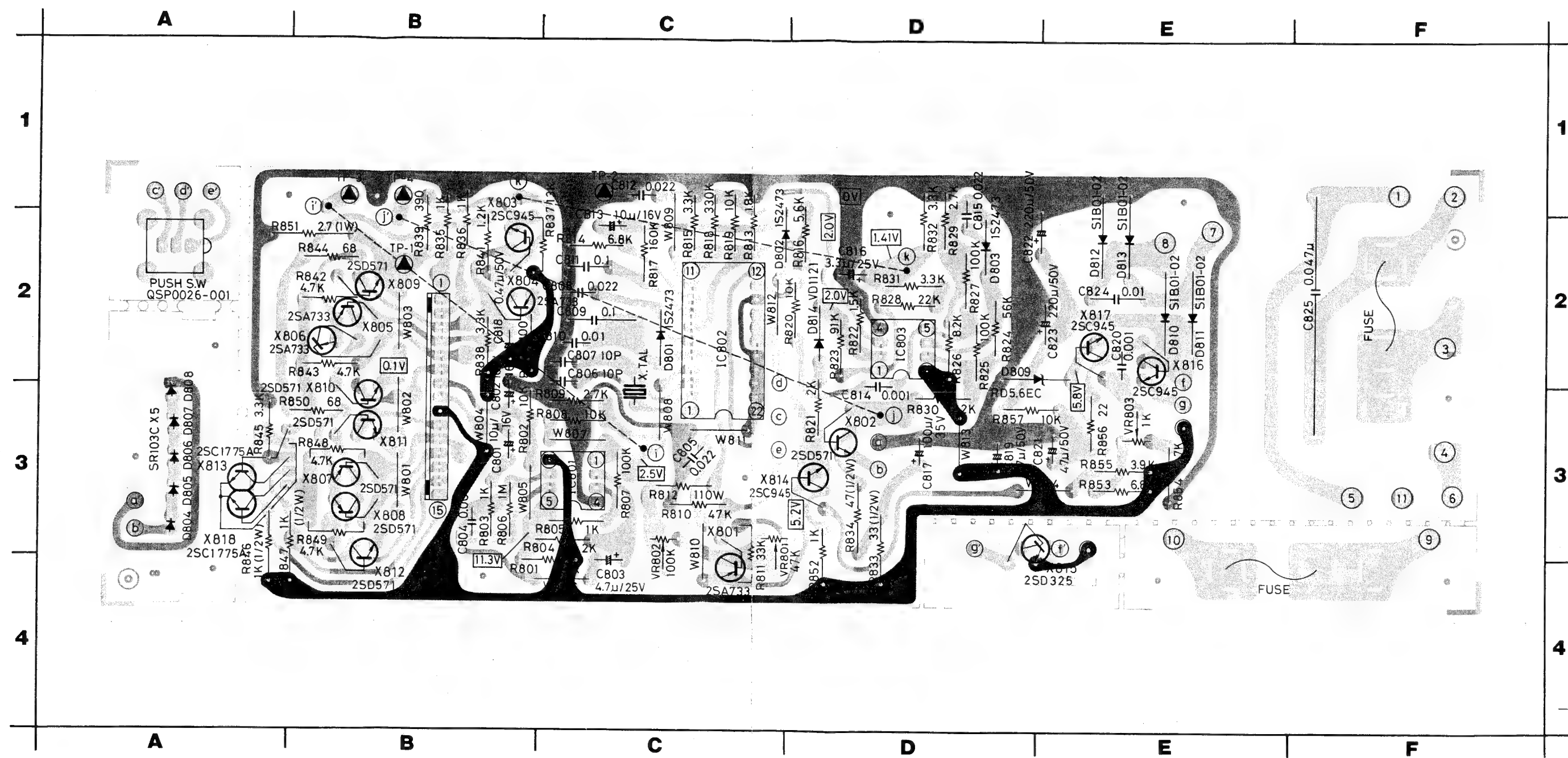


| Printed Circuit Board Ass'y Location | | |
|--------------------------------------|-------------------------------------|------|
| P.C. Board Ass'y | Description | Page |
| TXX-124 | Servomotor Control P.C. Board Ass'y | 17 |

- Warning !**
- Be careful not to allow metallic dust, etc. to enter inside the unit, because its motor is comprised of magnetic elements.
 - After replacement of the X813 transistor, apply KE45RTV (silicone adhesive) or an equivalent material around the transistor for thermal conduction.

14. TXX-124 Printed Circuit Board Ass'y and Parts List

The assembly varies according to the area where the units is sold. Refer to the table shown on page 28.



Notes:

1. Voltage values in are measured with a tester (impedance 33 kΩ/V) without a signal applied to the unit.
2. indicates positive B power supply.
 indicates ground.
 indicates the others.

Warning !

1. Be careful not to allow metallic dust, etc. to enter inside the unit, because its motor is comprised of magnetic elements.
2. After replacement of the X813 transistor, apply KE45RTV (silicone adhesive) or an equivalent material around the transistor for thermal conduction.

Transistors

| Item No. | Part Number | Rating | | Description | Maker |
|----------|---------------|--------|---------|-------------|---------|
| | | Pc | fT | | |
| X801 | 2SA733 (P, Q) | 250 mW | 180 MHz | Silicon | NEC |
| X802 | 2SD571 (L, K) | 800 mW | 110 MHz | " | " |
| X803 | 2SC945 (P, Q) | 250 mW | 250 MHz | " | " |
| X804 | 2SA733 (P, Q) | " | 180 MHz | " | " |
| X805 | 2SA733 (P, Q) | " | " | " | " |
| X806 | 2SA733 (P, Q) | " | " | " | " |
| X807 | 2SA733 (P, Q) | " | " | " | " |
| X808 | 2SA733 (P, Q) | " | " | " | " |
| X809 | 2SD571 (L, K) | 800 mW | 110 MHz | " | " |
| X810 | 2SD571 (L, K) | " | " | " | " |
| X811 | 2SD571 (L, K) | " | " | " | " |
| X812 | 2SD571 (L, K) | " | " | " | " |
| X813 | 2SC1775A (F7) | 300 mW | 200 MHz | " | Hitachi |
| X814 | 2SC945 (P, Q) | 250 mW | 250 MHz | " | NEC |
| X815 | 2SD325 (D, E) | 10 W | 8 MHz | " | Sanyo |
| X816 | 2SC945 (P, Q) | 250 mW | 250 MHz | " | NEC |
| X817 | 2SC945 (P, Q) | " | " | " | " |
| X818 | 2SC1775A (F7) | 300 mW | 200 MHz | " | Hitachi |

Integrated Circuits

| Item No. | Part Number | Rating | Description | Maker |
|----------|-------------|--------|-------------|----------------------------|
| IC801 | NJM4558D-D | | IC | Shin Nippon Musen |
| IC802 | SM6415A-4S | | " | Nihon Precision Circuit |
| IC803 | NJM4558D | | " | Shin Nippon Musen |

Diodes

| Item No. | Part Number | Rating | Description | Maker |
|----------|-------------|--------|-------------|-------------|
| D801 | 1S2473 | | Silicon | Toyo Dengu |
| D802 | 1S2473 | | " | " |
| D803 | 1S2473 | | " | " |
| D804 | SR103C | | L.E.D. | NEC |
| D805 | SR103C | | " | " |
| D806 | SR103C | | " | " |
| D807 | SR103C | | " | " |
| D808 | SR103C | | " | " |
| D809 | RD5.6EC | | Zener | " |
| D810 | SIB01-02 | | Silicon | Kyodo Denki |
| D811 | SIB01-02 | | " | " |
| D812 | SIB01-02 | | " | " |
| D813 | SIB01-02 | | " | " |
| D814 | VD1121 | | Varistor | NEC |

Capacitors

| Item No. | Part Number | Rating | | Description |
|----------|---------------|---------------|--------|---|
| C801 | QEW51CA-106 | 10 μ F | 16 V | Electrolytic |
| C802 | QEW51CA-106 | " | " | " |
| C803 | QEW51EA-475 | 4.7 μ F | 25 V | " |
| C804 | QCF31HP-102 | 1000 pF | 50 V | Ceramic |
| C805 | QCF31HP-223 | 0.022 μ F | " | " |
| C806 | QCT25UJ-100 | 10 pF | | " |
| C807 | QCT25UJ-100 | " | | " |
| C808 | QFM31HK-223 | 0.022 μ F | 50 V | Mylar |
| C809 | AWS104J50 | 0.1 μ F | " | Polypropylene |
| C810 | QFM31HK-103 | 0.01 μ F | " | Mylar |
| C811 | QFM31HK-104 | 0.1 μ F | " | " |
| C812 | QCF31HP-223 | 0.022 μ F | " | Ceramic |
| C813 | QEW51CA-106 | 10 μ F | 16 V | Electrolytic |
| C814 | QCF31HP-102 | 1000 pF | 50 V | Ceramic |
| C815 | QFM31HK-223 | 0.022 μ F | " | Mylar |
| C816 | QEB51EM-335 | 3.3 μ F | 25 V | Low leak current electrolytic |
| C817 | QEW51VA-107 | 100 μ F | 35 V | Electrolytic |
| C818 | QEW51HA-474 | 0.47 μ F | 50 V | " |
| C819 | QEW51HA-476 | 47 μ F | " | " |
| C820 | QCF31HP-102 | 1000 pF | " | Ceramic |
| C821 | QEW51HA-476 | 47 μ F | " | Electrolytic |
| C822 | QEW51HA-227 | 220 μ F | " | " |
| C823 | QEW51HA-227 | " | " | " |
| C824 | QCF12HP-103 | 0.01 μ F | 500 V | Ceramic |
| C825 | QFA72BM-473 | 0.047 μ F | 125 V | Metallized polypropylene (For TXX-124C) |
| C825 | QFH53AM-473M | " | 1000 V | " (For TXX-124D) |
| C825 | QFH72BM-473M | " | 125 V | " (For TXX-124B) |
| C825 | QFZ9007-473 | " | 425 V | Film (For TXX-124E) |
| C825 | QFZ9007-473BS | " | " | " (For TXX-124F) |

Resistors

| Item No. | Part Number | Rating | | Description |
|----------|---------------|----------------|-------|-------------|
| R801 | QRD141J-103SY | 10 k Ω | 1/4 W | Carbon |
| R802 | QRD141J-103SY | " | " | " |
| R803 | QRD141J-102SY | 1 k Ω | " | " |
| R804 | QRD141J-222SY | 2.2 k Ω | " | " |
| R805 | QRD141J-102SY | 1 k Ω | " | " |
| R806 | QRD141J-105SY | 1 M Ω | " | " |
| R807 | QRD141J-104SY | 100 k Ω | " | " |
| R808 | QRD141J-103SY | 10 k Ω | " | " |
| R809 | QRD141J-272SY | 2.7 k Ω | " | " |
| R810 | QRD141J-473SY | 47 k Ω | " | " |
| R811 | QRV144F-3302 | 33 k Ω | " | Metal film |
| R812 | QRV144F-1103 | 110 k Ω | " | " |
| R813 | QRD141J-182SY | 1.8 k Ω | " | Carbon |
| R814 | QRD141J-682SY | 6.8 k Ω | " | " |
| R815 | QRD141J-332SY | 3.3 k Ω | " | " |
| R816 | QRD141J-562SY | 5.6 k Ω | " | " |
| R817 | QRD141J-164SY | 160 k Ω | " | " |
| R818 | QRD141J-334SY | 330 k Ω | " | " |
| R819 | QRD141J-103SY | 10 k Ω | " | " |
| R820 | QRD141J-103SY | " | " | " |

Resistors

| Item No. | Part Number | Rating | | Description | Maker |
|----------|-----------------|----------------|-------|------------------|-------|
| R821 | QRD141J-202SY | 2 k Ω | 1/4 W | Carbon | |
| R822 | QRD141J-152SY | 1.5 k Ω | " | " | |
| R823 | QRD141J-913SY | 91 k Ω | " | " | |
| R824 | QRD141J-563SY | 56 k Ω | " | " | |
| R825 | QRD141J-104SY | 100 k Ω | " | " | |
| R826 | QRD141J-822SY | 8.2 k Ω | " | " | |
| R827 | QRD141J-104SY | 100 k Ω | " | " | |
| R828 | QRD141J-223SY | 22 k Ω | " | " | |
| R829 | QRD141J-272SY | 2.7 k Ω | " | " | |
| R830 | QRD141J-222SY | 2.2 k Ω | " | " | |
| R831 | QRD141J-332SY | 3.3 k Ω | " | " | |
| R832 | QRD141J-332SY | " | " | " | |
| R833 | QRG129J-330 | 33 Ω | 1/2 W | Oxide metal film | |
| R834 | QRG129J-470 | 47 Ω | " | " | |
| R835 | QRD141J-102SY | 1 k Ω | 1/4 W | Carbon | |
| R836 | QRD141J-102SY | " | " | " | |
| R837 | QRD141J-133SY | 13 k Ω | " | " | |
| R838 | QRD141J-332SY | 3.3 k Ω | " | " | |
| R839 | QRD141J-391SY | 390 Ω | " | " | |
| R840 | QRD141J-101SY | 100 Ω | " | " | |
| R841 | QRD141J-122SY | 1.2 k Ω | " | " | |
| R842 | QRD141J-472SY | 4.7 k Ω | " | " | |
| R843 | QRD141J-472SY | " | " | " | |
| R844 | QRD141J-680SY | 68 Ω | " | " | |
| R845 | QRD141J-332SY | 3.3 k Ω | " | " | |
| R846 | QRG129J-102 | 1 k Ω | 1/2 W | Oxide metal film | |
| R847 | QRG129J-102 | " | " | " | |
| R848 | QRD141J-472SY | 4.7 k Ω | 1/4 W | Carbon | |
| R849 | QRD141J-472SY | " | " | " | |
| R850 | QRD141J-680SY | 68 Ω | " | " | |
| R851 | QRX017J-2R7S | 2.7 Ω | 1 W | Uninflammable | |
| R852 | QRD141J-102SY | 1 k Ω | 1/4 W | Carbon | |
| R853 | QRD141J-682SY | 6.8 k Ω | " | " | |
| R854 | QRD141J-272SY | 2.7 k Ω | " | " | |
| R855 | QRD141J-392SY | 3.9 k Ω | " | " | |
| R856 | QRD141J-220SY | 22 Ω | " | " | |
| R857 | QRD141J-103SY | 10 k Ω | " | " | |
| VR801 | RVG0911H306-473 | 47 k Ω | | Variable | |
| VR802 | RVG0911H306-104 | 100 k Ω | | " | |
| VR803 | QVP4AOB-102 | 1 k Ω | | " | |

Others

| Item No. | Part Number | Rating | Description |
|----------|--------------|--------|--------------------|
| | E04300-004 | | Quartz crystal |
| | E41541-21 | | Bushing |
| | See page 14. | | Contact clip |
| | E48965-002 | | Fuse clip |
| | E61466-003 | | Heat sink |
| | QSP0026-001 | | Push switch |
| | See page 14. | | P.C. Board (plain) |

15. Packing Materials and Part Numbers

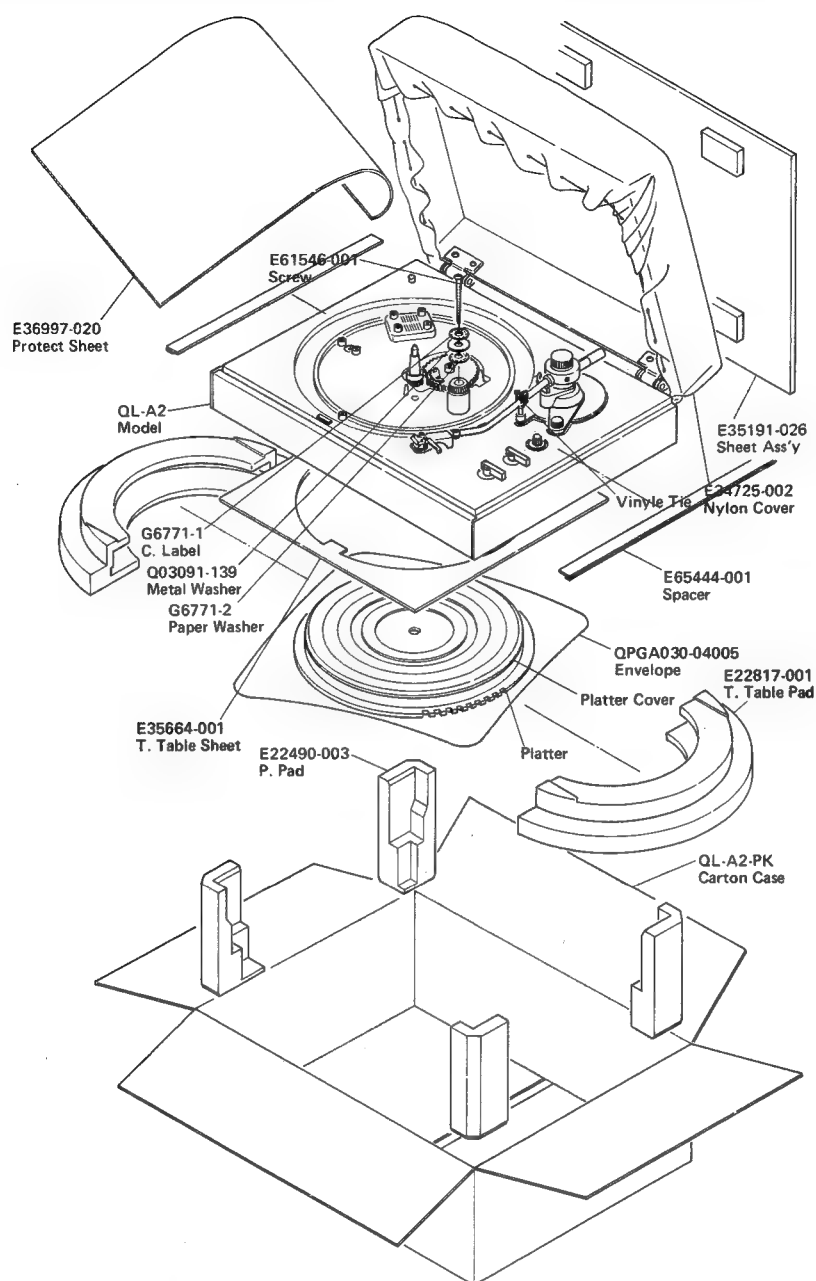
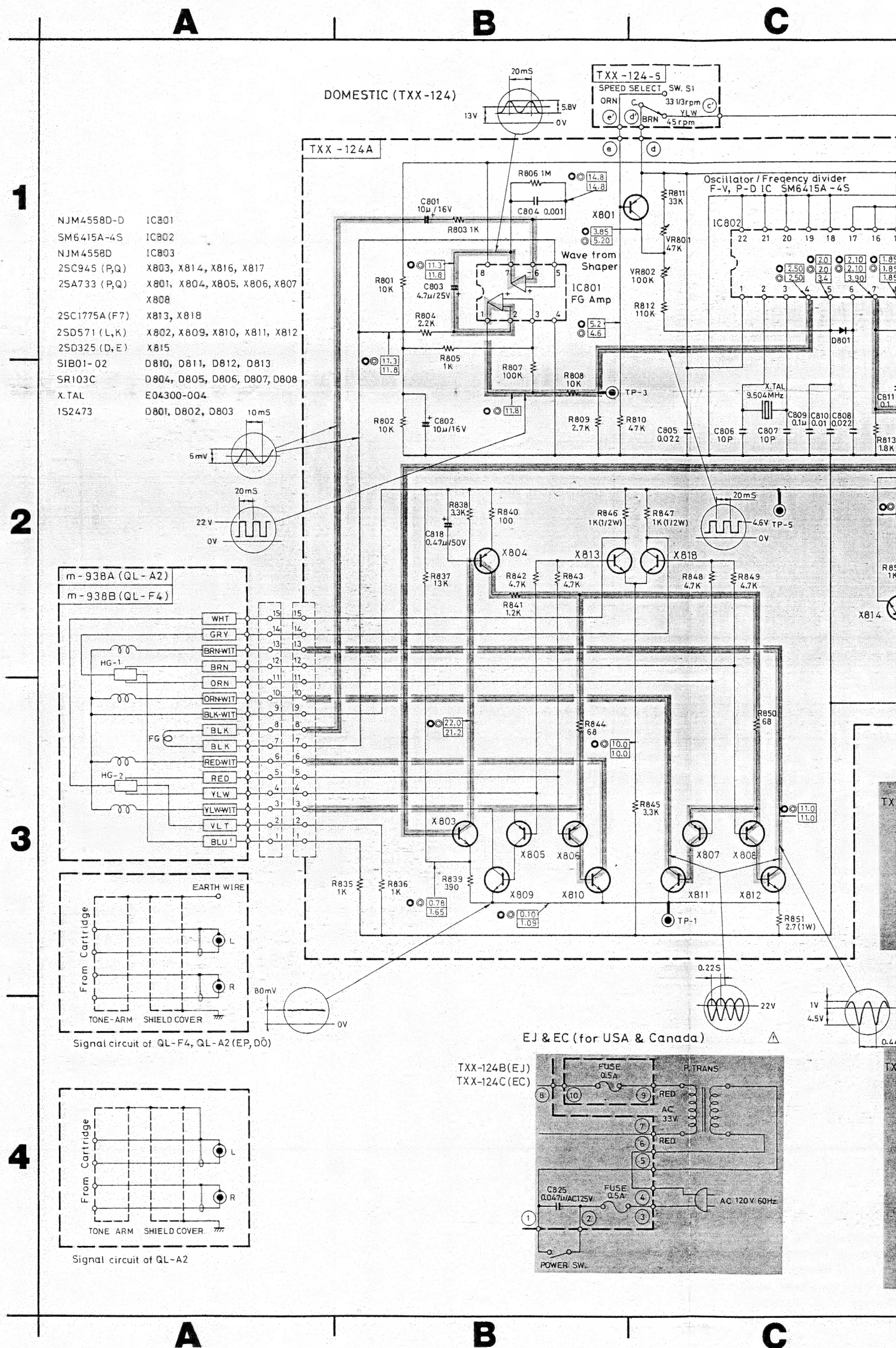


Fig. 28

16. Accessories List

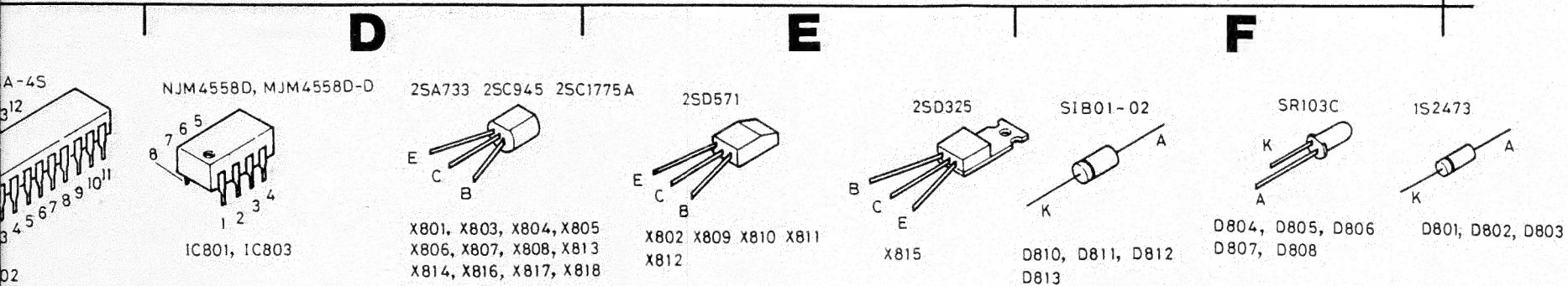
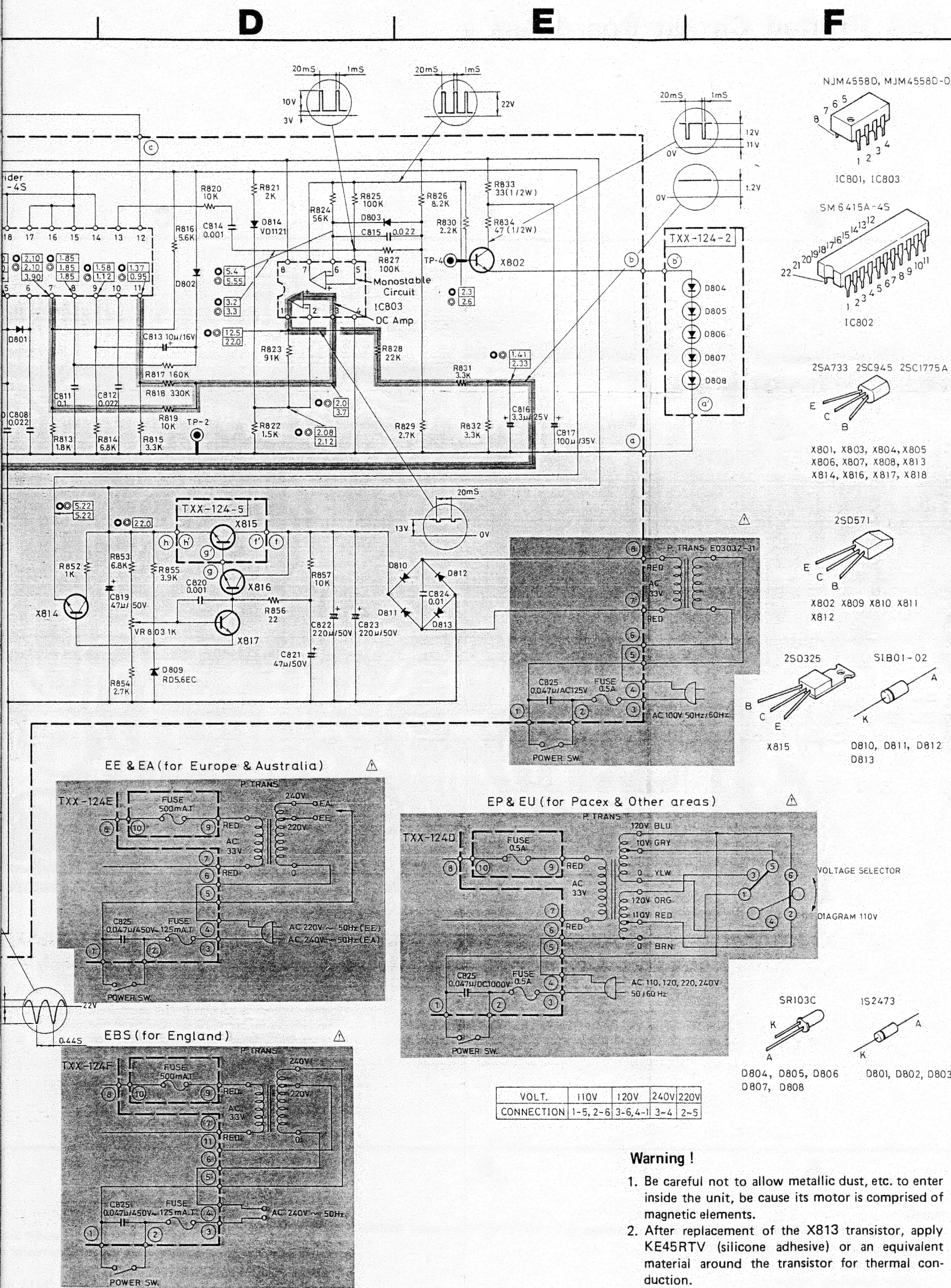
| Description | U.S.A. | Canada | Europe | U.K. | Australia | U.S. Military Market and Other Countries |
|-------------------|-------------|-------------|-------------|-------------|-------------|--|
| Instruction Book | E30580-650A | E30580-650A | E30580-650A | E30580-650A | E30580-650A | E30580-650A |
| Warranty Card | BT20032 | BT20025 | | BT20013B | BT20029 | BT20032 (U.S. Military Market) |
| Do It Better | BT20024B | — | — | — | — | — |
| Service Procedure | BT20023 | — | — | — | — | — |
| Envelope | E64207-001 | E64207-001 | E64207-001 | E64207-001 | E64207-001 | E64207-001 |
| EP Adaptor | E48820-001 | E48820-001 | E48820-001 | E48820-001 | E48820-001 | E48820-001 |
| Screw Ass'y | — | — | E61153-003 | E61153-003 | E61153-003 | E61153-003 |
| Siemens Plug | — | — | — | — | — | E04056 |

17. QL-A2 Schematic Diagram

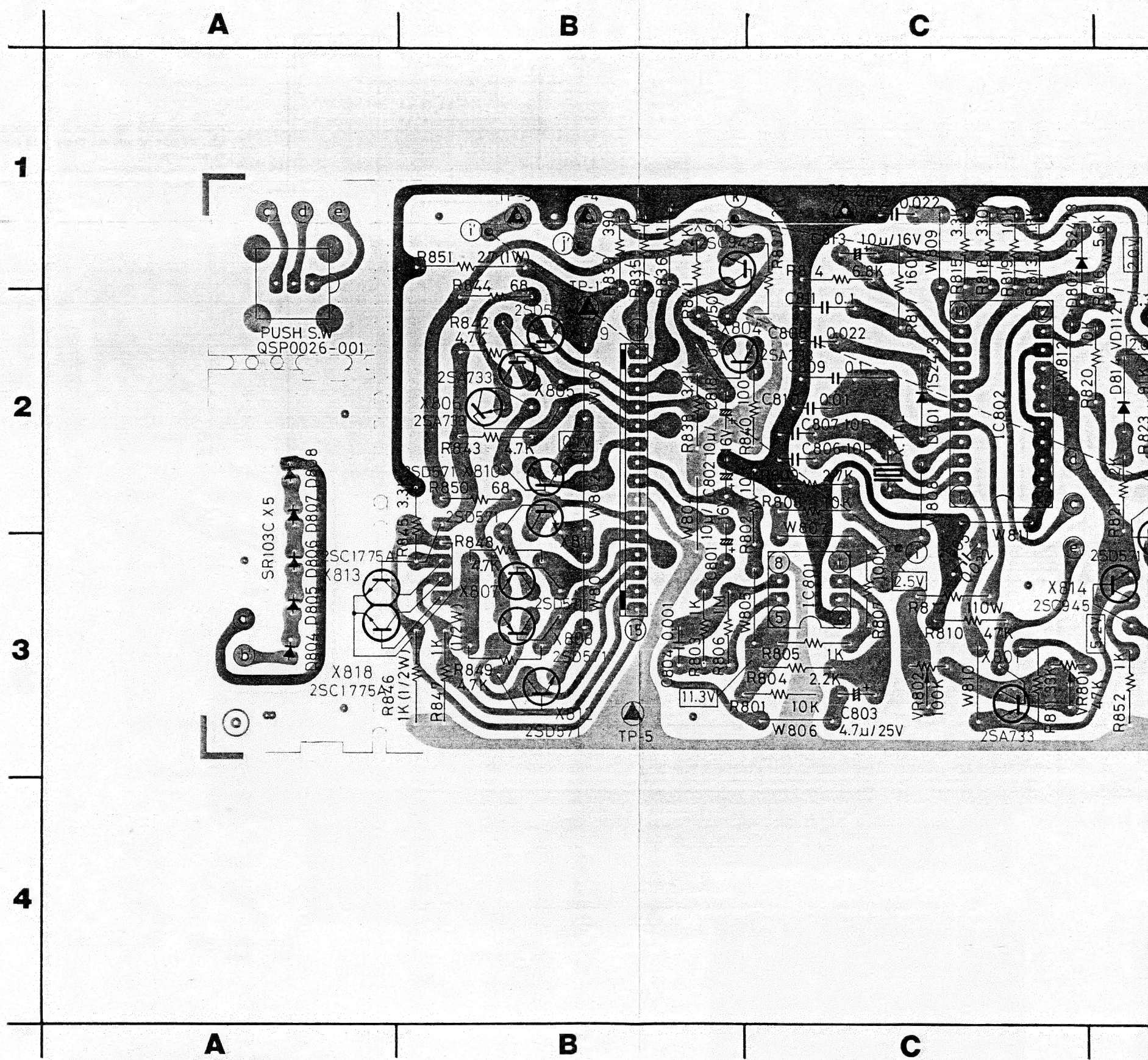


Printed Circuit Board Ass'y Location


| P.C. Board Ass'y | Description | Page |
|------------------|-------------------------------------|------|
| TXX-124 | Servomotor Control P.C. Board Ass'y | 17 |



TXX-124 Printed Circuit Board Ass'y

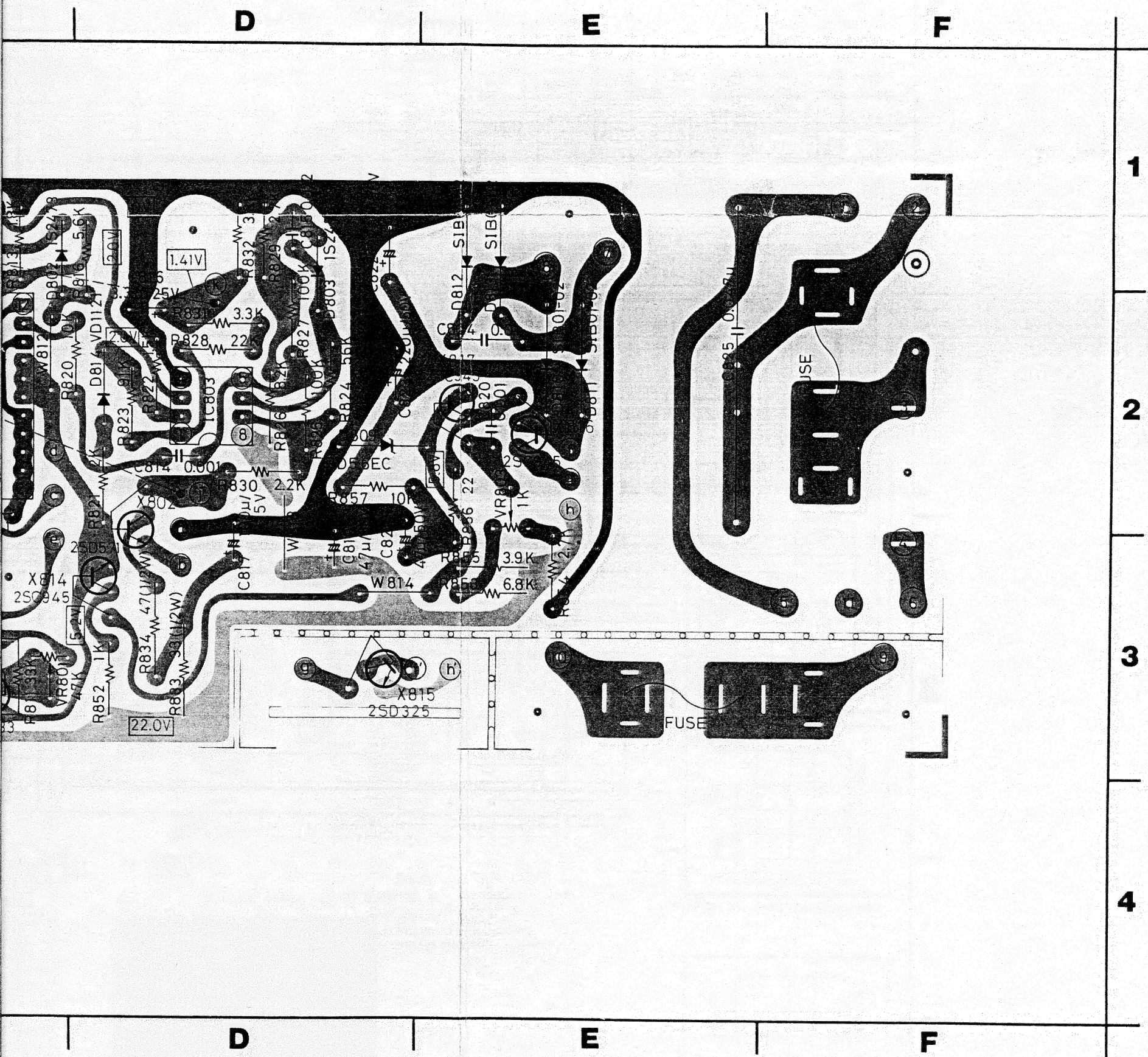


Notes:

- Notes:
1. Voltage values in are measured with a tester (impedance 33 k Ω /V) without a signal applied to the unit.
 2. indicates positive B power supply.
 indicates ground.
 indicates the others.

Warning !

1. Be careful not to allow metallic dust, etc. to enter inside the unit, because its motor is comprised of magnetic elements.
2. After replacement of the X813 transistor, apply KE45RTV (silicone adhesive) or an equivalent material around the transistor for thermal insulation.



metallic dust, etc. to enter
its motor is comprised of
the X813 transistor, apply
(resistive) or an equivalent
transistor for thermal con-